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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/866,334	05/25/2001	Sherif Embabi	TI-31516	4850
23494	7590	07/18/2005	EXAMINER	
TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265			NGUYEN, HIEP	
			ART UNIT	PAPER NUMBER
			2816	

DATE MAILED: 07/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center">Office Action Summary</p>	Application No. 09/866,334	Applicant(s) EMBABI ET AL.	
	Examiner Hiep Nguyen	Art Unit 2816	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8-10, 13 and 14 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 6, 7, 15 and 16 is/are rejected.
- 7) ☒ Claim(s) 3-5, 11 and 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Specification***

The disclosure is objected to because of the following informalities: the disclosure “Because bias transistor 18 can apply a stable, high magnitude reverse bias voltage V_r across the source/drain junctions of transistor 14” in page 13, lines 14-16 is not relevant because it is not clear how the “reverse bias” can be applied across the source/drain junctions of transistor 14. When both transistors (18A) and (18B) are turned on, the same voltage (V_p) is applied to the source and drain of transistor (14) thus, there is no reverse bias seen.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Correction and /or clarification is required.

Regarding claims 1, 3, 4, 8, 10, 11, 12 and 15, the recitation “first and second **complementary** bias transistors” is indefinite because it is misdescriptive. By definition complementary transistors are transistors of **opposite conductivity** that are operate in the same functional unit. Figure 3 of the present application shows that the first and second complementary bias transistors (18A, 18B) are of the same type of conductivity (p-type).

Regarding claim 3, the recitation “having a conduction path connected between a reference voltage and the **first** and **second source**/drain regions of the switching transistor” is indefinite because it is misdescriptive. Figure 3 of the present application shows that the switching transistor (14) has **only one** source or drain. The recitation “so that the first and second bias transistors are turned **on** when the switching transistor is turned **on**” is indefinite because it is misdescriptive. Figure 3 of the present application shows than transistor (14) and

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transistors (18A, 18B) are of different types and they have gates connected together thus, they cannot be turned on at the same time.

Regarding claims 6 and 15, the recitation "strongly reverse bias" is indefinite because it is misdescriptive. Figure 3 of the present application shows that transistors (18A) and (18B), when turned on, apply a same voltage (V_p) to the source and drain of transistor (14) thus, there is no reverse bias seen. Clear explanation is required.

Claims 2, 5, 7, 9, 13, 14 and 16 are indefinite because of the technical deficiency of claim 1, 8 and 15.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 6, 15 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Okata (USP. 5,796,286).

Regarding claims 1 and 6, figures 5 and 6 of Okata shows a switched variable capacitor comprising:

a switching field-effect transistor (Q21), first and second capacitors (C21, C22), first and second bias transistors (Q22, Q23) having sources connected to a bias voltage (24, 25). When the bias transistors are ON, the switching capacitor is OFF. Note that the sources of transistors (Q22, Q23) are connected to transistor (C13) that is charged with a voltage. Note that when transistors (Q22) and (Q23) are turned on, a same voltage is applied to the source/drain of transistor (Q21).

Regarding claims 15 and 16, because the circuit of figure 6 of Otaka performs a function described in claim 15. Therefore, it is inherent that the method of claim 15 reads on figure 6 of Okata. Note that when transistors (Q22) and (Q23) are turned on, a same voltage is applied to the source/drain of transistor (Q21).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okata (USP. 5,796,286).

Regarding claim 2, figures 5 and 6 of Okata includes all the limitations of claim 2 except for the limitation that the switching capacitor and the first and second bias transistors are of different types. However, it is old and well known that the n-type and p-type of transistors are interchangeable for conforming to the polarity of the control signal. Therefore, it would have been obvious to those skilled in the art to replace the switch transistor (Q21) with a transistor of opposite type so that when transistor (Q21) is turned on, transistors (Q22) and (Q23) are turned off and vice versa.

Claims 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okata (USP. 5,796,286) in view of Paul et al. (USP. 6,737,698).

Regarding claim 7, figures 5 and 6 of Okata includes all the limitations of claim 7 except for the limitation that the capacitors are metal-to-metal type. Col. 1 lines 11-20 of Paul shows that the metal-to-metal type of capacitor has a high quality factor that is independent of the dc voltage of the capacitor. Therefore, it would have been obvious to those skilled in the art to replace the capacitors of Okata with the capacitors taught by Paul for having a high quality factor that is independent of the dc voltage of the capacitor.

Allowable Subject Matter

Claims 8-10, 13 and 14 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

Claims 3-5 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

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Claims 8-10, 13 and 14 would be allowable because the prior art of record fails to teach or suggest an array of switched variable capacitors comprising: a plurality of capacitances binary-weighted from a small capacitance to a largest capacitance, a plurality of control lines binary weighted to present a digital word associated with a corresponding one of a plurality of capacitances as called for in claim 8.

Claims 3-5 would be allowable because the prior art of record fails to teach or suggest a switched variable capacitor comprising first and second bias transistors as called for in claim 3.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hiep Nguyen whose telephone number is (571) 272-1752. The examiner can normally be reached on Monday to Friday from 7:30am to 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Callahan can be reached on (571) 272-1740. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

01-21-05



TUAN T. LAM
PRIMARY EXAMINER